

Applying cartography to semi-automated map creation

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Abstract. As a national mapping agency recognised for its excellence in cartography, embracing the world of Geographic Information System (GIS)-created mapping has been something of a challenge for Ordnance Survey.

This poster aims to showcase what cartographic styling can be achieved within a modern day GIS package, to give an outline of what tools were used and to have a brief look at how a set of generic rules can achieve respectable results across a national product with somewhat varied terrain and topography.

Our Multi-Resolution Data Programme (MRDP) combined with cartographic ability coming into GIS has allowed us to produce new products almost straight from data. This has a massive gain in terms of data currency and if automation is set up right with the correct quality checks in place then there can also be time and cost efficiency gains.

Using examples such as OS VectorMap® Local and OS VectorMap® District, the poster will demonstrate how Ordnance Survey's Cartographic Design and Development team have been able to style relatively detailed, national-coverage map products in a GIS.

For many years, styling within a GIS environment was very limited when compared to graphics packages such as Adobe's Creative Suite. Whilst still not ideal for map creation, the advantage of being able to read in geographically referenced data straight from a database, apply some 'on the fly' data filtering, apply styles including colours, line weights and labelling, apply selective masking and automate export to produce a national map series makes the appeal outweigh its weaknesses for some map products. Recent introductions to GIS software such as cartographic representations, some basic visual effects, better symbol support, improved multi-level styling

capabilities, better user interfaces and enhanced export options make it more desirable to the cartographer.

In the United Kingdom, we have quite a variety of topography for a relatively small island nation. The remote, barren and rural mountain landscapes of the Scottish Highlands pose far different cartographic challenges to the crowded urban mass of London; our capital city and the largest urban zone in the European Union. We also have areas such as the Midlands with a dense meeting of communication themes such as roads and railways and as a group of islands, a large proportion of the country can be considered coastal.

In automated map creation this variation makes some aspects of cartography very difficult. Even with filtering and categorising of the content data, one cannot keep subcategorising to cater for every different scenario. At some point a feature type on the map will have to be styled using the method of 'one rule fits all'. For label placement especially this is something of a skill in recognising or calculating the best compromise. Traditionally a cartographer would label based upon a set of rules but would have the opportunity to consider other factors such as competing labels, other features on the map, and so on in order to find the 'best space' for a label. For our semi-automated products this has been calculated automatically using a set of GIS rules worked out by our Cartographic Design and Development team.

The results of this work are the release of the OS VectorMap® Local and OS VectorMap® District product portfolios. The cartography of both the raster versions of these products and the stylesheets for the vector versions were completely produced using ESRI ArcMap 10 and have allowed us to create a national set of maps with a cartographic style that is automatically applied to the data at the push of a button.

Keywords: Automated cartography, cartography, multi-resolution data, semi-automated, labeling, text placement

Short Biography

Christopher Wesson is a Cartographic Design Consultant with a keen interest in partnering modern technologies with Ordnance Survey's long tradition of excellence in cartographic design.